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Bachelor of Business Administration (BBA) | Semester 4 | UK4DSCMGT201

Financial Management

Course Code: UK4DSCMGT201 • Module 3 Notes

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Module 3: Working Capital Management

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1. Concept, Significance, and Classification of Working Capital

Working capital represents the financial lifeblood that sustains the daily operational heartbeat of a commercial enterprise. While long-term capital budgeting commits funds into durable productive fixed assets (such as manufacturing plants, specialized assembly lines, and transport infrastructure), working capital management governs the continuous administration, conversion, and financing of short-term current assets and current liabilities. The core objective of working capital management is to preserve an optimum equilibrium between **operational profitability** and **enterprise liquidity**, ensuring that the firm possesses sufficient cash to settle maturing trade obligations without tying up excessive capital in idle, non-earning resources.

Theoretical Concepts of Working Capital

Financial literature articulates two distinct conceptual definitions of working capital:

1. **Gross Working Capital:** Represents the aggregate monetary investment committed across all short-term current assets of the enterprise, encompassing cash in hand, bank balances, marketable short-term securities, bills receivable, trade debtors, raw material inventories, work-in-progress, finished goods, and prepaid operating expenses. This concept focuses on the physical quantum and asset allocation of current resources available to support operations.
2. **Net Working Capital:** Represents the quantitative difference between total current assets and total current liabilities (*NWC = Current Assets - Current Liabilities*). Current liabilities comprise trade creditors, bills payable, short-term bank borrowings, outstanding statutory expenses, and provisions due for settlement within one financial year. Net working capital measures the firm's liquidity cushion and solvency margin, indicating the portion of current assets financed by long-term capital providers.

Permanent Versus Variable (Fluctuating) Working Capital

From an operational time perspective, working capital requirements are partitioned into permanent and fluctuating components:

Dimension	Permanent (Fixed) Working Capital	Variable (Temporary) Working Capital
Operational Nature	The minimum baseline quantum of current assets permanently required by the enterprise at all times to maintain uninterrupted basic production and commercial operations.	The additional seasonal or cyclical working capital required above the permanent baseline to support temporary spikes in production, festive sales surges, or bulk raw material harvests.

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Dimension	Permanent (Fixed) Working Capital	Variable (Temporary) Working Capital
Time Horizon	Continuous, stable, and expanding steadily over multi-year periods in tandem with corporate revenue growth.	Temporary, fluctuating, and self-liquidating; drops back to zero once the peak seasonal demand or trade credit cycle concludes.
Financing Source	Must be financed strictly using long-term capital sources (equity shares, retained earnings, preference shares, debentures, or long-term bank debt).	Appropriately financed using short-term credit vehicles (trade credit, bank cash credits, overdrafts, commercial paper, or short-term bills).

2. The Operating Cycle (Working Capital Cycle)

The **Operating Cycle** (or Cash Conversion Cycle) represents the exact duration of time required for an enterprise to commit cash into raw materials, process those materials through manufacturing into finished inventory, sell the finished inventory on credit to commercial customers, and ultimately collect cash receipts from trade debtors. A shorter operating cycle accelerates cash velocity, reduces financing costs, and boosts return on equity.

Components and Mathematical Formulation of the Operating Cycle

The gross operating cycle (GOC) represents the total duration from raw material receipt to cash collection from receivables:

$$\text{Gross Operating Cycle (GOC)} = \text{RMP} + \text{WIPP} + \text{FGP} + \text{RCP}$$

Where: RMP = Raw Material Storage Period; WIPP = Work-in-Progress Conversion Period; FGP = Finished Goods Storage Period; RCP = Receivables Collection Period.

The net operating cycle (NOC), also known as the Cash Conversion Cycle (CCC), nets out the spontaneous credit provided by trade suppliers:

$$\text{Net Operating Cycle (NOC)} = \text{GOC} - \text{PDP} = (\text{RMP} + \text{WIPP} + \text{FGP} + \text{RCP}) - \text{PDP}$$

Where: PDP = Payable Deferral Period (the average duration credit is extended by raw material suppliers before cash payment is settled).

Mathematical Computation of Individual Operating Cycle Stages

- **Raw Material Storage Period (RMP):** *(Average Raw Material Stock / Annual Raw Material Consumption) × 365 days*
- **Work-in-Progress Period (WIPP):** *(Average WIP Stock / Annual Cost of Production) × 365 days*
- **Finished Goods Period (FGP):** *(Average Finished Goods Stock / Annual Cost of Goods Sold) × 365 days*

- **Receivables Collection Period (RCP):** *(Average Trade Debtors & Receivables / Annual Net Credit Sales) × 365 days*
- **Payables Deferral Period (PDP):** *(Average Trade Creditors & Payables / Annual Gross Credit Purchases) × 365 days*

Worked Numerical Problem: Corporate Operating Cycle Calculation

Managerial Case Problem: Coastal Polymers Ltd., Alappuzha, presents the following operational figures for the fiscal year ended March 31, 2026:

- Annual Raw Material Consumption: Rs. 14,60,000; Average Raw Material Inventory: Rs. 1,60,000
- Annual Cost of Production: Rs. 21,90,000; Average Work-in-Progress Inventory: Rs. 1,20,000
- Annual Cost of Goods Sold: Rs. 29,20,000; Average Finished Goods Inventory: Rs. 2,40,000
- Annual Gross Credit Sales: Rs. 36,50,000; Average Trade Receivables: Rs. 4,50,000
- Annual Gross Credit Purchases: Rs. 18,25,000; Average Trade Payables: Rs. 2,00,000
- Operating Year Basis: 365 Days

Step-by-Step Resolution:

1. **RMP:** (1,60,000 / 14,60,000) × 365 = **40.0 Days**
2. **WIPP:** (1,20,000 / 21,90,000) × 365 = **20.0 Days**
3. **FGP:** (2,40,000 / 29,20,000) × 365 = **30.0 Days**
4. **RCP:** (4,50,000 / 36,50,000) × 365 = **45.0 Days**
5. **Gross Operating Cycle (GOC):** 40 + 20 + 30 + 45 = **135.0 Days**
6. **PDP:** (2,00,000 / 18,25,000) × 365 = **40.0 Days**
7. **Net Operating Cycle (Cash Conversion Cycle):** 135.0 - 40.0 = **95.0 Days**

Managerial Interpretation: Coastal Polymers Ltd. requires 95.0 days of external working capital financing to sustain its operational flow. To reduce carrying costs, management should shorten inventory holding times and improve debtor collections while negotiating extended supplier credit terms.

3. Financing Approaches to Working Capital Management

Corporate financial management navigates three primary structural strategies for financing working capital assets, reflecting different risk-return appetites:

A. The Hedging (Maturity Matching) Approach

Under the hedging approach, each asset category is financed strictly with a capital instrument of corresponding maturity. Permanent fixed assets and permanent current assets are financed entirely with long-term debt and equity capital. Variable (seasonal) current assets are financed exclusively with short-term credit. As the seasonal peak dissipates, the liquidating current assets generate cash to extinguish the short-term debt, eliminating refinancing risk and minimizing interest expense.

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B. The Conservative Financing Approach

The conservative approach prioritizes solvency and low default risk over short-term profitability. The firm finances all fixed assets, all permanent current assets, and a significant portion of seasonal fluctuating current assets through long-term capital sources. Short-term borrowing is deployed only during extreme peak seasonal emergencies. While this strategy virtually eliminates insolvency and liquidity risk, it depresses return on equity because long-term capital is more expensive than short-term debt and the firm holds idle surplus cash during off-peak seasons.

C. The Aggressive Financing Approach

The aggressive approach prioritizes high return on equity over liquidity safety. The enterprise finances all temporary current assets and a substantial portion of permanent current assets using cheap short-term debt and bank cash credits. Only fixed assets and minimal core assets are funded with long-term capital. While this structure minimizes the firm's overall cost of capital and expands earnings per share during economic booms, it exposes the enterprise to severe liquidity risk, interest rate volatility, and refinancing freezes if short-term credit lines are unexpectedly terminated by banks.

4. Dimensions of Working Capital: Inventory Management

Inventory constitutes the single largest physical component of current assets in manufacturing and retail enterprises. Inventory management seeks to maintain sufficient raw materials to prevent production stoppages and adequate finished goods to satisfy customer demand, while minimizing the substantial carrying and procurement costs of holding stock.

A. Inventory Costs: Carrying Costs Versus Ordering Costs

- **Ordering Costs:** Costs incurred every time a purchase requisition is placed with suppliers, including requisition processing, vendor vetting, freight transportation, receiving inspection, and invoice matching. Ordering costs vary directly with the number of purchase orders placed per year.
- **Carrying (Holding) Costs:** Costs incurred to store, insure, and maintain inventory on hand, including warehouse rental, climate control, insurance premiums, material handling labor, physical shrinkage, pilferage, and the opportunity cost of capital tied up in stock. Carrying costs vary directly with the average volume of inventory stored.

B. The Economic Order Quantity (EOQ) Model

The Economic Order Quantity represents the optimal purchase order size that minimizes the aggregate sum of annual ordering costs and annual carrying costs:

$$EOQ = \sqrt{\left[(2 \times A \times S) / C \right]}$$

Where: A = Annual demand / consumption in units; S = Cost of placing a single purchase order (Rs.); C = Annual carrying cost per unit of inventory (Rs.).

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Worked Numerical Problem: EOQ Resolution

Managerial Case Problem: Cochin Precision Engineering Ltd. consumes 10,000 units of specialized industrial bearings annually. The procurement cost per order is Rs. 200, and the annual carrying cost is Rs. 4 per bearing per year. Calculate: (1) Economic Order Quantity; (2) Number of orders per year; and (3) Total annual inventory management cost at EOQ.

Step-by-Step Resolution:

$$EOQ = \sqrt{\left[(2 \times 10,000 \times 200) / 4 \right]} = \sqrt{\left[40,00,000 / 4 \right]} = \sqrt{\left[10,00,000 \right]} = 1,000 \text{ Units}$$

- **Number of Orders per Year:** Annual Demand / EOQ = 10,000 / 1,000 = **10 Orders per Year**.
- **Annual Ordering Cost:** 10 orders × Rs. 200 = **Rs. 2,000**.
- **Annual Carrying Cost:** (EOQ / 2) × C = (1,000 / 2) × Rs. 4 = 500 × Rs. 4 = **Rs. 2,000**.
- **Total Annual Inventory Cost:** Ordering Cost + Carrying Cost = Rs. 2,000 + Rs. 2,000 = **Rs. 4,000**.

Verification: At EOQ, annual ordering costs exactly equal annual carrying costs (Rs. 2,000 = Rs. 2,000), proving mathematical optimality.

C. ABC Analysis (Selective Inventory Control)

ABC analysis applies Pareto's Principle (the 80/20 rule) to inventory control, classifying items by annual consumption value:

1. **Category A Items:** Represent approximately 10% to 15% of total inventory items, but account for 70% to 80% of total annual consumption value. Demands strict executive oversight, continuous stock audits, and minimal safety stocks.
2. **Category B Items:** Represent approximately 20% to 30% of total items, accounting for 15% to 25% of annual consumption value. Managed via standard periodic reviews and moderate buffer stocks.
3. **Category C Items:** Represent approximately 60% to 70% of total items, but account for only 5% to 10% of annual consumption value (inexpensive fasteners, clips, washers). Governed by simple visual two-bin reorder systems with large purchase orders to capture volume discounts.

5. Dimensions of Working Capital: Cash and Receivables Management

A. Cash Management Motives and Models

John Maynard Keynes identified three fundamental motives for holding corporate cash balances: **Transaction Motive** (settling routine payrolls, supplier bills, taxes), **Precautionary Motive** (hedging against unexpected contingent emergencies like equipment failure or transport strikes), and **Speculative Motive** (preserving liquidity to exploit sudden commercial opportunities, such as discounted distress purchases of raw materials).

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- **The Baumol Cash Management Model:** Adapts the inventory EOQ formula to cash balances, treating cash inflows and outflows as steady and predictable. The optimal cash conversion lot size minimizes brokerage conversion fees against forgone marketable security interest.
- **The Miller-Orr Model:** Designed for stochastic, fluctuating cash flows. Establishes an Upper Control Limit (U), a Lower Control Limit (L), and a Return Point (Z). When cash hits the upper limit, surplus cash is invested in marketable securities; when cash drops to the lower limit, securities are sold to replenish balances back to point Z.

B. Receivables Management and Credit Policy Frameworks

Accounts receivable arise from commercial credit sales extended to distributors and institutional clients. A well-designed credit policy coordinates three vital parameters:

1. **Credit Standards:** Establishing financial creditworthiness criteria using the 5 Cs of Credit: *Character* (reputation and payment integrity), *Capacity* (operational cash generation capability), *Capital* (financial net worth), *Collateral* (assets pledged to secure debt), and *Conditions* (macroeconomic environment).
2. **Credit Terms:** Defining credit duration and early settlement discounts (such as *"2/10, net 30"*—granting a 2% cash discount if payment is remitted within 10 days, otherwise requiring full gross payment within 30 days).
3. **Collection Policy and Aging Schedule:** Structuring disciplined collection workflows (reminders, personal visits, legal notices) and auditing receivables through Aging Schedules that classify outstanding debtor balances into 0–30 days, 31–60 days, 61–90 days, and over 90 days to identify potential bad debt write-offs promptly.

6. Mathematical Methods of Estimating Working Capital Requirements

Corporate financial management deploys two rigorous quantitative methodologies to forecast aggregate working capital capital requirements for upcoming operating periods:

A. The Operating Cycle Forecasting Method

The operating cycle method estimates the exact monetary investment required in each component of current assets based on the duration of its holding period relative to an operating year (365 days):

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Required Inventory Investment = [ Annual Cost / 365 ] × Holding Period in Days
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Where: Raw materials are valued at annual raw material purchase cost; Work-in-progress is valued at prime cost plus 50% factory overheads; Finished goods are valued at total cost of production.

Trade debtors are conservatively valued at either total sales value or total cost of sales (excluding the unearned profit margin). The sum of all asset investments minus spontaneous supplier credit equals the net working capital required.

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Worked Numerical Problem: Comprehensive Working Capital Requirement Estimation

Managerial Case Problem: Travancore Industrial Agro-Chemicals Ltd., Kollam, plans to manufacture 30,000 units of organic fertilizer during the upcoming fiscal year. The cost structure per unit is established as follows:

- Raw Material Cost per Unit: Rs. 50
- Direct Labor Cost per Unit: Rs. 20
- Manufacturing & Administrative Overheads per Unit: Rs. 30
- **Total Cost per Unit: Rs. 100**
- Selling Price per Unit: Rs. 120 (Profit = Rs. 20 per unit)

Operating Cycle Time Parameters:

- Raw Material Storage Period: 1 Month (30 Days)
- Work-in-Progress Manufacturing Cycle: 0.5 Month (15 Days) (Assume 100% material, 50% labor & overheads)
- Finished Goods Storage Period: 1 Month (30 Days)
- Credit Allowed to Commercial Customers (Debtors): 2 Months (60 Days) (Valued at cost)
- Credit Allowed by Raw Material Suppliers (Creditors): 1 Month (30 Days)
- Lag in Payment of Wages and Overheads: 0.5 Month (15 Days)
- Minimum Desired Cash and Bank Balance: Rs. 1,00,000
- Contingency Provision: 10% of Net Working Capital
- Year Basis: 360 Days (12 Months of 30 Days each)

Step-by-Step Resolution:

1. **Annual Total Expenditure:**
    - Raw Material: 30,000 units × Rs. 50 = Rs. 15,00,000
    - Direct Labor: 30,000 units × Rs. 20 = Rs. 6,00,000
    - Overheads: 30,000 units × Rs. 30 = Rs. 9,00,000
    - Total Production Cost: 30,000 × Rs. 100 = Rs. 30,00,000
2. **Current Assets Investments:**
    - Raw Material Inventory: Rs. 15,00,000 × (1 / 12) = **Rs. 1,25,000**
    - Work-in-Progress Inventory: [Materials (15L × 0.5/12)] + [Labor & Overheads (15L × 50% × 0.5/12)] = Rs. 62,500 + Rs. 31,250 = **Rs. 93,750**
    - Finished Goods Inventory (at cost): Rs. 30,00,000 × (1 / 12) = **Rs. 2,50,000**
    - Trade Debtors (at cost): Rs. 30,00,000 × (2 / 12) = **Rs. 5,00,000**
    - Minimum Cash Balance = **Rs. 1,00,000**
    - **Gross Current Assets (A): Rs. 10,68,750**

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3. **Current Liabilities (Spontaneous Financing):**
    - Trade Creditors for Raw Material: Rs. 15,00,000 × (1 / 12) = **Rs. 1,25,000**
    - Outstanding Wages: Rs. 6,00,000 × (0.5 / 12) = **Rs. 25,000**
    - Outstanding Overheads: Rs. 9,00,000 × (0.5 / 12) = **Rs. 37,500**
    - **Total Current Liabilities (B): Rs. 1,87,500**
4. **Net Working Capital:** Gross Current Assets (Rs. 10,68,750) - Current Liabilities (Rs. 1,87,500) = **Rs. 8,81,250**
5. **Add: Contingency Margin (10%):** 10% × Rs. 8,81,250 = **Rs. 88,125**
6. **Total Estimated Working Capital Requirement: Rs. 9,69,375**

Managerial Decision: Management must mobilize Rs. 9,69,375 in permanent and long-term working capital funds to ensure smooth manufacturing without operational disruption.

7. Bank Financing and Regulatory Committees on Working Capital in India

Commercial banks in India supply the majority of short-term industrial working capital through Cash Credit (CC) and Working Capital Demand Loans (WCDL). The Reserve Bank of India has historically appointed high-level expert study groups to formulate disciplined lending norms:

A. The Tandon Committee (1974) and Maximum Permissible Bank Finance (MPBF)

Headed by Prakash Tandon, this committee revolutionized working capital lending by ending unregulated bank cash credits and introducing three progressive lending methods to calculate Maximum Permissible Bank Finance (MPBF):

- **First Method of Lending:** The borrower must finance a minimum of **25% of the Net Working Capital Gap** (Current Assets minus Current Liabilities excluding bank borrowings) from long-term capital sources. The bank finances the remaining 75%:

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MPBF (1st Method) = 0.75 × (Current Assets - Other Current Liabilities)
```

Yields a minimum Current Ratio of 1.17:1. Suitable for small and struggling enterprises.

- **Second Method of Lending:** The borrower must finance a minimum of **25% of Total Current Assets** from long-term funds. The bank provides the remainder:

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MPBF (2nd Method) = (0.75 × Current Assets) - Other Current Liabilities
```

Yields a minimum Current Ratio of 1.33:1. Universal standard enforced for medium and large corporate borrowers.

- **Third Method of Lending:** The borrower must finance the entire Core Current Assets (Permanent Working Capital) plus 25% of the remaining fluctuating current assets from long-term capital sources. Yields the highest liquidity ratio.

B. The Chore Committee (1979) and Nayak Committee (1991)

- **Chore Committee:** Enforced the strict adoption of the Tandon Second Method for all borrowers with credit limits exceeding Rs. 50 lakhs, mandated quarterly information systems (QIS), and bifurcated credit lines into fixed loan components and fluctuating cash credit limits to curb credit diversion.
- **Nayak Committee:** Specifically targeted Micro, Small, and Medium Enterprises (MSMEs). Recommended that MSME working capital limits be sanctioned on a simplified basis equal to a minimum of **20% of their projected annual gross turnover**, with the enterprise contributing 5% from internal equity.

8. Factoring, Forfaiting, and the TReDS Platform

Modern working capital management deploys specialized institutional financing mechanisms to convert trade receivables into immediate liquidity:

1. **Factoring:** A financial arrangement whereby an enterprise assigns its trade receivables (invoices) to a specialized financial institution (the Factor) at a discount. The Factor advances 80% to 90% of the invoice value immediately, undertakes ledger administration, and collects dues from buyers:
    - *Recourse Factoring:* The client enterprise bears the ultimate credit risk; if the customer defaults, the factor recovers the advance from the client.
    - *Non-Recourse Factoring:* The factor absorbs the entire bad debt risk, providing complete credit insurance to the seller.
2. **Forfaiting:** A specialized international financing mechanism involving the medium-to-long-term discounting of trade receivables arising from the export of capital goods without recourse to the exporter, typically guaranteed by an international bank aval.
3. **Trade Receivables Discounting System (TReDS):** An electronic platform authorized by the RBI facilitating the financing and discounting of trade receivables of MSMEs from corporate buyers and public sector undertakings (PSUs) through multiple financiers (banks and NBFCs), ensuring immediate MSME liquidity and eliminating payment delays.

9. The Profitability Versus Liquidity Dilemma in Working Capital Management

Working capital management represents a continuous operational trade-off between two conflicting organizational objectives: **Liquidity** (the ability to honor maturing financial obligations promptly) and **Profitability** (the ability to maximize economic returns on invested capital). Current assets, while highly liquid, are low-earning or non-earning assets. Cash balances parked in commercial current accounts generate zero interest return; raw materials and finished goods stored in warehouses

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accumulate storage charges without yielding profits until sold; and trade credit extended to debtors locks up capital at zero nominal interest.

Conversely, fixed assets (production machinery, technology infrastructure) generate substantial operating revenues but cannot be easily liquidated to satisfy unexpected trade debts. If management commits excessive funds to current assets, the firm achieves absolute liquidity and zero default risk, but sacrifices profitability and depresses Return on Total Assets (ROA). If management aggressively cuts current asset holdings to the bare minimum to invest in fixed assets, profitability expands, but the firm faces severe insolvency risk, production line shutdowns from stockouts, and supplier boycotts.

Working Capital Policy	Proportion of Current Assets	Primary Strategic Motivation	Liquidity Risk	Profitability Impact
Conservative (Relaxed) Policy	High proportion of current assets relative to sales; generous credit terms; massive buffer inventories.	Eliminate stockout risks, absorb supply chain shocks, and stimulate customer sales through lenient trade credit.	Virtually zero default or insolvency risk.	Depressed Return on Equity (ROE) due to heavy holding costs and idle cash balances.
Moderate (Matching) Policy	Balanced current asset allocation calibrated to projected operational cycles.	Balance holding costs against stockout risks through inventory models (EOQ) and credit scoring.	Moderate, manageable operational liquidity risk.	Optimized risk-adjusted Return on Equity.
Aggressive (Restricted) Policy	Minimal current assets; strictly enforced credit periods; lean Just-in-Time (JIT) inventories.	Maximize capital velocity and eliminate holding costs by forcing funds into high-yielding fixed assets.	High vulnerability to cash crunches, supplier defaults, and lost sales.	High potential ROE during economic expansions; rapid collapse during downturns.

10. Contemporary Digital Treasury and Cash Management Systems

The modernization of commercial banking in India has transformed corporate cash management from paper-based ledger entries into real-time digital liquidity operations. Modern enterprise cash management rests upon four pillars:

1. **Centralized Cash Concentration Architecture:** Multi-branch enterprises deploy **Zero Balance Accounts (ZBA)** across regional sales depots. Daily cash collections from retail customers are automatically swept at the close of business into a centralized corporate concentration account at the corporate headquarters, preventing idle balances across branch accounts.
2. **Controlled Disbursement Accounts (CDA):** Specialized corporate disbursement accounts structured with commercial banks that notify corporate treasurers early in the morning of the exact monetary total of vendor checks presenting for clearing that day. This enables the treasurer to

transfer only the exact necessary funds from interest-bearing overnight money market mutual funds, maximizing yield.

3. **National Electronic Clearing Architecture:** Mandatory migration from physical paper checks to real-time electronic clearing platforms: **Real Time Gross Settlement (RTGS)** for high-value corporate transfers exceeding Rs. 2,00,000; **National Electronic Funds Transfer (NEFT)** operating in half-hourly settlement batches; **Immediate Payment Service (IMPS)**; and **National Automated Clearing House (NACH)** for automated recurring collections.
4. **Treasury Surplus Parking Vehicles:** Modern corporate treasuries park temporary seasonal surpluses in high-liquidity, low-risk money market instruments: Overnight Mutual Funds, Liquid Funds (offering T+1 redemption), 91-day Treasury Bills, and Commercial Paper issued by AAA-rated corporate entities.

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